Fungal Genetics Reports

Volume 28 Article 18

Mutagenicity of 4-nitroquinoline l-oxide and three hair dye components in Sordaria brevicollis

C. C. Yu-Sun

L. A. Carter

L. Sandoval

See next page for additional authors

Recommended Citation

Yu-Sun, C. C., L.A. Carter, L. Sandoval, and A. Thompson (1981) "Mutagenicity of 4-nitroquinoline l-oxide and three hair dye components in Sordaria brevicollis," *Fungal Genetics Reports*: Vol. 28, Article 18. https://doi.org/10.4148/1941-4765.1663

Mutagenicity of 4-nitroquinoline l-oxide and three hair dye components in Sordaria brevicollis

Abstract

Mutagenicity of 4-nitroquinoline 1-oxide and three hair dye components in *Sordaria brevicollis*

Authors

C. C. Yu-Sun, L. A. Carter, L. Sandoval, and A. Thompson

SORDARIA RESEARCH NOTE

Yu-Sun, C. C., L. A. Carter, L. Sandoval and A. Thompson

Mutagenicity of 4-nitroquinoline 1-oxide and three hair dye components in *Sordaria brevicollis*.

Our mutagen testing system detects changes in ascospore color and colony morphology. Wild type strains wt 4A and wt 1a were cultured on crossing medium described by Fields and Olive (1967 Genetics.57: 483). The hair dye components were dissolved in 2 ml dimethyl sulfoxide (DMSO) and 4-nitroquinoline-1-oxide (4-NQO) was dissolved in 1 ml 95% ethanol. These chemical solutions were freshly prepared for each experiment. A total of 4 x 10^6 conidia were treated with 0.2ml chemical solution in 4 ml pH 7 phosphate buffer at 25°C or 37°C. In the control tubes 0.2 ml DMSO or 95% ethanol was, added. After five days growth, conidia from each strain were suspended in sterile distilled water. The conidial suspensions for hair dye component experiments were treated at 37°C for 30 min and the conidial suspensions for 4NQO experiments were treated at 25°C for two hours, centrifuged for 5 min at 3500 rpm, the supernatant drained off; the conidia were then washed in two changes of phosphate buffer at pH 7,resuspended in 4 ml sterile distilled water and 1 ml conidial suspension containing 1 x 10^6 conidia was transferred to each of the 4 cultures of opposite mating type. Ths crosses were incubated at 25°C for 5-7 days and ascospores were collected on plain agar or germination medium. Ascospore color and morphological mutants were detected by examination under a stereomicroscope. These spores were isolated and crossed to wild type to check stability of the mutants.

Results of four carcinogenic chemicals tested are summarized in Table 1., These results indicate that for these chemicals there is a positive correlation between carcinogenicity in animal and mutagenicity in *S. brevicollis*.

Table 1

Mutagenic effect of hair dye components and 4-NQO in *Sordaria brevicollis*

Chemicals	Concentration'	Average No. of mutants per petri plate (1x10^6 conidia/plate) Morphological	Color
4-Nitro-o-phenylene diamine (hair dye components)	3.2 X 10^{-4} M	4	8
2-amino-4-nitrophenol (hair dye components)	1.6 X 10^{-3} M	3	5
2,5-diaminoanisole sulfate (hair dye components)	2.4 X 10^{-4} M	2	5
4-nitroquinoline-l-oxide* (4NQO)	1 X 10^{-8} M	2	4
	1 X 10^{-7} M	3	6
	1 X 10^{-4} M	4	5
	1 X.10^{-3} M	4	7
Control (+ DMSO or ethanol)		0 or1	2
Ethyl methane Sulfonate (EMS)*	5 X 10^{-2} M	6	13

*Many pale spores failed to germinate.

(Supported by National Institutes of Health Grant RR08108.) - - - - Department of Biology, University of Albuquerque, Albuquerque, New Mexico 87120.